MICROPHONE ARRAY PROCESSING SYSTEM FOR NOISY MULTIPATH ENVIRONMENTS

ABSTRACT OF THE DISCLOSURE

Apparatus and a corresponding method for processing speech signals in a noisy reverberant environment, such as an automobile. An array of microphones (10) receives speech signals from a relatively fixed source (12) and noise signals from multiple sources (32) reverberated over multiple paths. One of the microphones is designated a reference microphone and the processing system includes adaptive frequency impulse response (FIR) filters (24) enabled by speech detection circuitry (21) and coupled to the other microphones to align their output signals with the reference microphone output signal. The filtered signals are then combined in a summation circuit (18). Signal components derived from the speech signal combine coherently in the summation circuit, while noise signal components combine incoherently, resulting in composite output signal with an improved signal-to-noise ratio. The composite output signal is further processed in a speech conditioning circuit (20) to reduce the effects of reverberation.